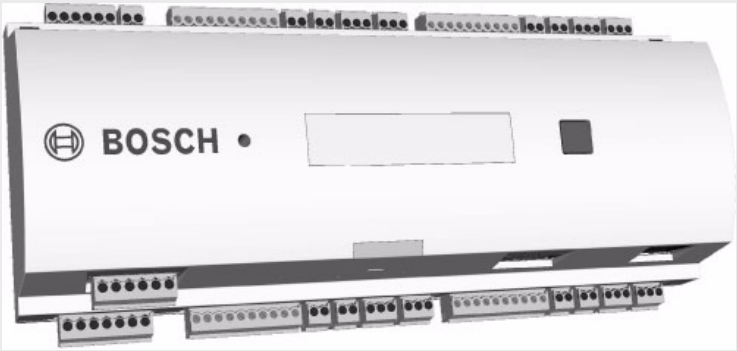

AMC2 4W

APC-AMC2-4W | APC-AMC2-4WCF | APC-AMC2-4WUS

BOSCH

en Installation manual

Remarks

This hardware is part of a security system. Access shall be limited to authorized persons only.

Some states do not allow the exclusion or limitation of implied warranties, or limitation of liability for incidental or consequential damages, so the above limitation or exclusion might not apply to you.
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1 Please-read carefully

1.1 Explanation of Used Symbols

Throughout this document, helpful tips, important notes, cautions and warnings will be presented for the reader to keep in mind. These appear different from the rest of the text as follows:

CAUTION! or WARNING!
These warn the operator that damage to the program or equipment might occur.

NOTE!
Important Notes — must be followed for successful operation and programming. Tips and shortcuts might also be included here.

1.2 Internet

If you are interested in further information on this product or information on other products, please, refer to our website at http://www.bosch-security-systems.com.

1.3 We Are Interested in Your Opinion

We constantly try to improve the quality of our products and our manuals. Should you have any suggestions for improvement, please, send us your comments.

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2 Safety Instructions

2.1 Important Safety Notes

1. **Read, Follow, and Retain Instructions** - All safety and operating instructions must be read and followed properly before putting the unit into operation. Retain instructions for future reference.
2. **Consider all Warnings** - Adhere to all warnings on the unit and in the operating instructions.
3. **Accessories** - Use only accessories recommended by the manufacturer or those sold with the product. Accessories not recommended by the manufacturer shall not be used, as they may cause hazards.
4. **Installation Precautions** - Do not place this unit on an unstable stand, tripod, bracket, or mount. The unit may fall, causing serious injury to persons and damage to the unit. Mount the unit according to the manufacturer's instructions.
5. **Cleaning** - Disconnect the unit from power before cleaning. Follow any instructions provided with the unit. Generally, using a damp cloth for cleaning is sufficient. Do not use liquid cleaners or aerosol cleaners.
6. **Service** - Do not attempt to service this unit by yourself. Opening or removing covers may expose you to dangerous voltages or other hazards. Refer all servicing to qualified service personnel.
7. **Damage Requiring Service** - Disconnect the unit from the main AC or DC power source and refer servicing to qualified service personnel under the following conditions:
   - When the power supply cord or plug is damaged.
   - If liquid has been spilled or an object has fallen into the unit.
   - If the unit has been exposed to water and/or inclement weather (rain, snow, etc.).
   - If the unit does not operate normally, when following the operating instructions. Adjust only those controls

specified in the operating instructions. Improper adjustment of other controls may result in damage, and require extensive work by a qualified technician to restore the unit to normal operation.

- If the unit has been dropped or the cabinet damaged.
- If the unit exhibits a distinct change in performance, this indicates that service is needed.

8. **Replacement Parts** - When replacement parts are required, the service technician shall use replacement parts that are specified by the manufacturer. Unauthorized substitutions may result in fire, electrical shock or other hazards.
9. **Safety Check** - Upon completion of service or repair work on the unit, ask the service technician to perform safety checks to ensure that the unit operates properly
10. **Power Sources** - Operate the unit only from the type of power source indicated on the label. If unsure of the type of power supply to use, contact your dealer
    - For units intended to operate from battery power, refer to the operating instructions.
    - For units intended to operate with External Power Supplies, use only the recommended approved power supplies.
    - For units intended to operate with a limited power source, this power source must comply with EN/UL 60950. Substitutions may damage the unit or cause fire or shock.
    - For units intended to operate at 12 VDC normal input voltage is 12 VDC. Voltages applied to the unit's power input shall not exceed 15 VDC. User-supplied wiring, from the 12 VDC power supply to the unit, must be in compliance with electrical codes (Class 2 power levels). Do not ground the 12 VDC supply at the terminals or at the unit's power supply terminals.
11. **Grounding** - If an outside cable system is connected to the unit, ensure that the cable system is grounded. U.S.A. models only Section 810 of the National Electrical Code,

ANSI/ NFPA No.70, provides information regarding proper grounding of the mount and supporting structure, grounding of the coax to a discharge unit, size of grounding conductors, location of discharge unit, connection to grounding electrodes, and requirements for the grounding electrode.

12. **Grounding and Protection against reverse Polarity** - This unit may be equipped with a polarized alternating current line plug (a plug with one blade wider than the other). This safety feature allows the plug to fit into the power outlet in only one way. If unable to insert the plug fully into the outlet, try reversing the plug. If the plug still fails to fit, contact an electrician to arrange replacement of the obsolete outlet. Do not defeat the safety purpose of the polarized plug. Alternately, this unit may be equipped with a 3-wire grounding plug (a plug with a third pin, for grounding). This safety feature allows the plug to fit into a grounding power outlet only. If unable to insert the plug into the outlet, contact an electrician to arrange replacement of the obsolete outlet. Do not defeat the safety purpose of the grounding plug.
13. **Lightning** - For added protection during a lightning storm, or when this unit is left unused for long periods of time, disconnect the unit from power. This will prevent damage to the unit due to lightning and excessive power line surges.
14. **Restricted Access Locations** are required for the installation.

2.2 FCC & ICES Information

This device complies with part 15 of the FCC rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC rules. The limits are designed to provide reasonable protection against harmful interference in a residental installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

1. Reorient or relocare receiving antenna
2. Increase the separation between the equipment and the receiver
3. Connect the equipment into an outlet on a circuit different from that to which the receiver is connected
4. Consult the dealer or an experienced radio/TV technician for help

2.3 Safety Precautions

Read instructions!
Before working with the AMC2 4W, read these instructions carefully. Make sure you have understood all information described in this document.

Warning! Risk of electric shock!
External power supplies must be installed and put into service by qualified personnel. Compliance with the relevant regulations must be ensured.

Warning! Risk of damaging equipment!

- Always switch off power of the AMC2 4W before modifying the installation.
- Do not connect or disconnect plug connectors, data cables or screw connectors while power is on!

Health and Safety
Installation of the AMC2 4W must comply with any local fire, health and safety regulations. A secured door that may be part of an escape route from an area must be installed with:

- A fail-safe lock (A). So that the door will be released if power fails. Ideally, a magnetic lock should be used as these are less likely to jam or seize.
- A normally-closed break-glass or manual pull (B) in the lock supply wiring, so that in an emergency the fail-safe lock can be immediately powered down.

CAUTION!
You must ground the AMC2 4W. Disconnect both AC and battery power supply before working on the controller.

Warning! Risk of damage!
Protect the hardware from electrostatic discharge by observing ESD instructions before unpacking or touching connectors or electronics.

CAUTION: Lithium Battery
Danger of explosion if battery is replaced incorrectly. Replace only with the same type as recommended by the manufacturer. Dispose used batteries according to the battery manufacturer's instructions.

2.4 Unpacking

Check the packaging for visual damage. If anything has been damaged during transport, make the transport agency aware of this.
Carefully unpack the unit. This is an electronic device that must be handled with care to avoid damage. Do not attempt to put the unit into operation if components are damaged.
If parts are missing, inform your customer service representative or a Bosch Security Systems salesperson. The shipping carton is the safest transport container for the unit. Store it and the other packaging material for future use. If the unit has to be sent back, use the original packaging.

3 Introduction

3.1 Description of the AMC2 4W

The AMC2 4W is equipped with four independent interfaces for Wiegand type readers. By that it is able to control two doors with a reader in each direction and up to four doors with a reader in one direction only.

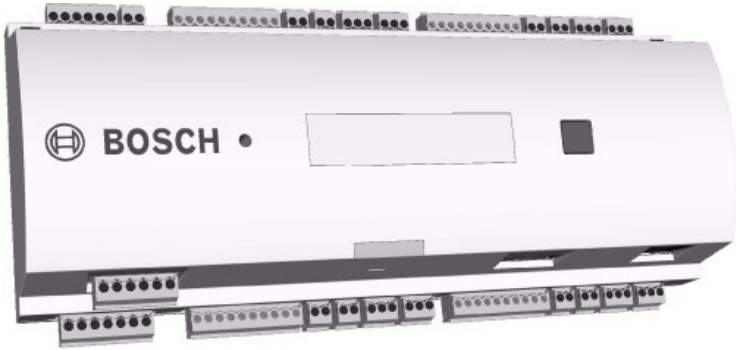


Fig. 3.1 The Access Modular Controller AMC2 4W

All necessary information for access verification is stored in a battery buffered on-board memory and a Compact Flash (CF) memory card. This guarantees autonomous access decisions and complete access registrations even if the management host system is offline. The built in compact flash adapter provides adequate storage capability for cardholders and events.

The AMC2 4W electronic is completely covered by a plastic housing. The LC Display provides all important status information.
Using the AMC2 4W gives you the full functionality and the offline capability of a complete access control system on each room. This leads to an excellent reliability and a very high redundancy without paying extra money.

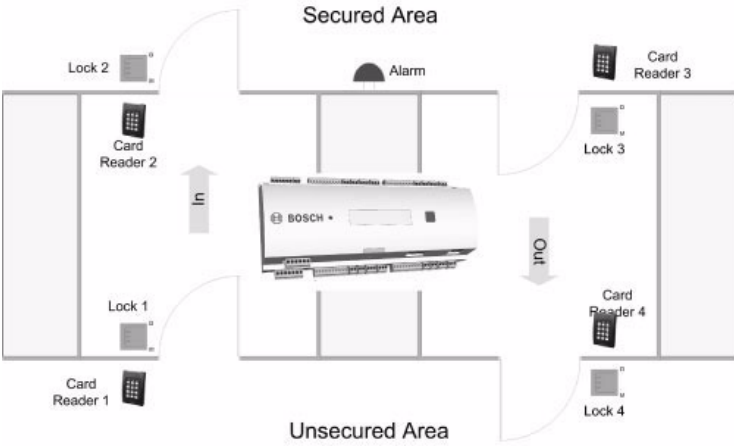


Fig. 3.2 The AMC2 4W in a four door safety lock

The AMC2 4W can communicate upstream to the host computer via eight RS-485 multi-dropped, RS-232 or 10/100 Mbit/s Ethernet. It has eight analog input devices and eight relay outputs. With its analog input devices, the AMC2 4W verifies, for example, if a lock is closed or open. The relay outputs can be used to activate lock mechanisms if access is granted, or activate an external alarm system if an intrusion or system alert is detected. If the eight input and output on board are not enough to configure the system up to three additional extensions (AMC 8I-8O or AMC 16I-16O) can be connected. The extensions offer 8 or 16 additional inputs and outputs.
The setup procedure for an AMC2 4W is very simple and extremely fast by the use of door templates. Once selected, all the inputs and outputs are predefined. This settings can be changed using the Device Editor in that way to choose every free contact of the AMC2 4W or an connected extension.

3.2 Equipment Configuration

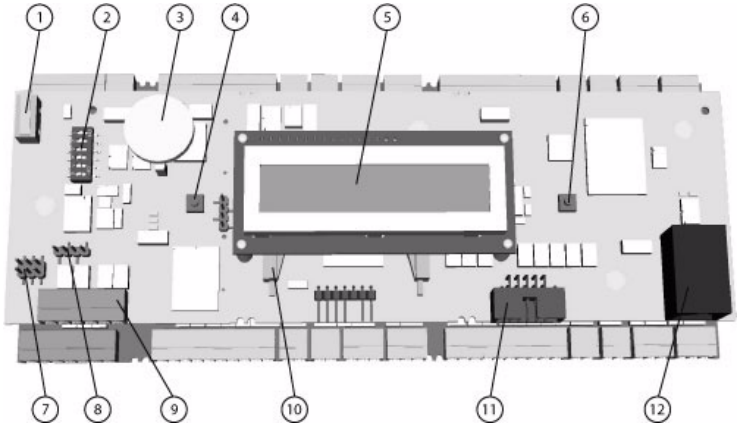


Fig. 3.3 Upper circuit board with display (top side)

1. Internal tamper contact
2. DIP switch for RS-485 address selection, protocol and RS-232/RS-485 selection
3. Lithium battery for buffering of static RAM and real time clock (RTC). The battery shall be replaced by qualified personnel every ten years or if indicated by an appropriate event.
4. Reset push button - available by using the srew driver
5. LC Display
6. Push button to select the display view - available by using the push button on the top of the housing
7. Jumper: Potential equalization between different mass systems and protective earth (shield)
8. Jumper: interface selector RS-485 Host connection, RS-485 two wire or RS-485 four wire (depends on external wiring)
9. Configurable RS-485 host interface (pluggable screw connector)
10. Docking station for the compact flash

11. Configurable RS-232 host interface (ribbon cable connector)
12. Configurable 10/100 Mbit/s Ethernet interface

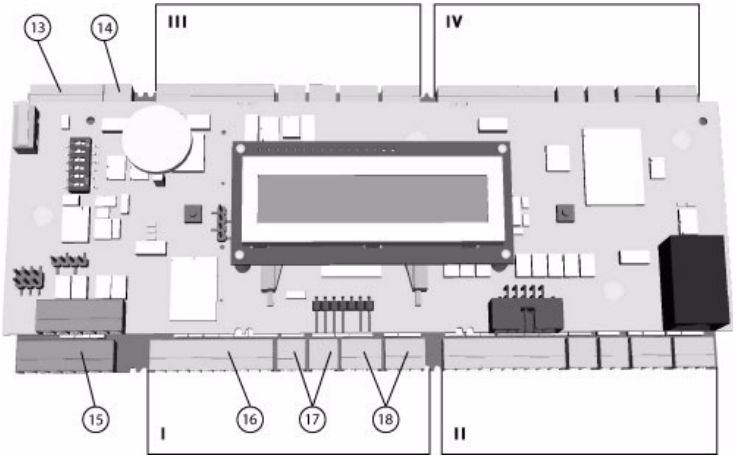


Fig. 3.4 Overview - Interfaces

13. RS-485 extension module bus (Pluggable screw connector)
14. External tamper contact (Pluggable screw connector)
15. Power supply (Pluggable screw connector)
16. Wiegand interface for card readers (Pluggable screw connector)
17. Analog input (Pluggable screw connector)
18. Relay Output (Pluggable screw connector)

I-IV Channel 1 - 4

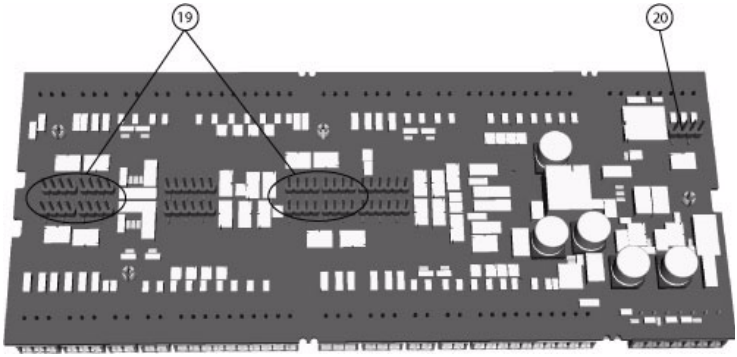


Fig. 3.5 Jumper at the bottom side

19. Jumper: Selector for either potential free relay output or powered by AMC2 4W internal power supply (wet/dry contacts)
20. Jumper: Potential equalization between different mass systems and protective earth (shield)

3.3 Performance Characteristics

- Host address selectable via DIP sliding switch
- Four possible configurable host interfaces:
  - RS-485 2-wire
  - RS-485 4-wire
  - RS-232
  - Ethernet 10/100 Mbit/s
- Four peripheral input devices via Wiegand interface
- Eight relay outputs
  - potential-free or
  - with internal power supply
- Eight analog inputs with internal power supply
- Battery buffered SRAM and real time clock (RTC)
- Pluggable Compact Flash from 64 MB to 1024 MB
- LC Display
- Transfer rate host interface RS-485: 38,4 kBit/s
- Self controlling transfer-receive-switching
- Power supply for internal electronics: 10V - 30VDC - max. 7A
- The AMC2 4W is to be used with power supply AMC PBC-60 (F.01U.026.573) with integrated UPS

3.4 System Overview

The Access Controller AMC2 4W is connected between the management host system and different peripheral devices. By default a management host system is connected via Ethernet. A management host connection via RS-485 or RS-232 is also possible.

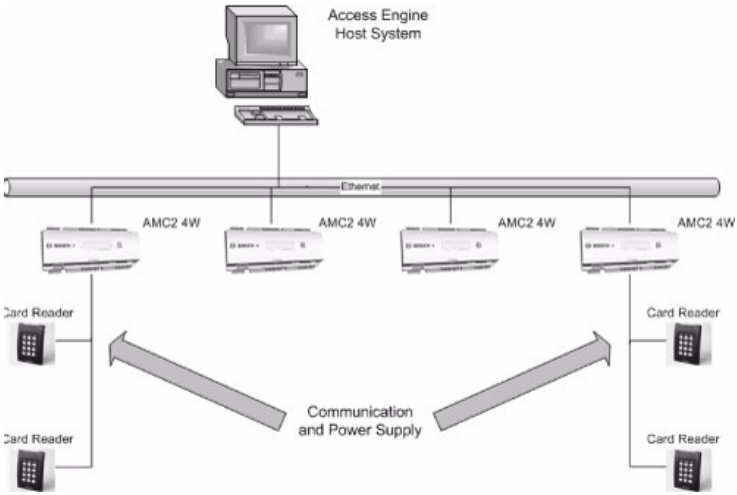


Fig. 3.6 System overview

In RS-485 mode up to eight access controllers AMC2 4W can be combined on one party line. Via Wiegand interfaces up to four peripheral devices can be connected to each AMC2 4W.

4 Technical Data

Hardware	– Integrated Microcontroller (32Bit, 30MHz) – SRAM (2MB) – Serial EEPROM – RTC – Pluggable Compact Flash from 64 MB up to 1024 MB – Battery for SRAM and real time clock (RTC) – Host address selectable via DIP sliding switch or software – Host interface • RS-485 2-wire or 4-wire Transfer rate: 38,4 kBit/s (No parity, 8 Bit, 1 Stopbit) • RS-232 • Ethernet – four Wiegand interfaces for card readers – Eight relay outputs • Maximum switching power: 60VA • Maximum switching voltage: 30V AC/DC • Maximum switching current: 2A – eight analog inputs with sabotage monitoring – Tamper contact for enclosures
Power supply	Electronics: 10V – 30V DC
Display	64,8 mm x 13,9 mm 1 line, 16 characters

Power consumption	Internal: 5 VA Peripheral devices: using the AMC PBC-60 • up to 55 VA at 12V DC • constant load: 25 VA • peak load: 30 VA
Connectors	Pluggable screw connectors
Protection Class	IP30
Environment temperature	0°C to 45°C
Humidity	Up to 95%, without condensation
Housing material	Bottom: PPO (UL 94 V-0) Top: Polycarbonate (UL 94 V-0)
Dimensions	(W/H/D) 225mm x 88mm x 60mm (8.9" x 3.5" x 2.4") Weight: app. 0,48 kg (0.9 pounds)

Conductor data for connection to power supply

For short distances below 25m (75 feet) use AWG18 conductors. For higher distances install an additional power supply close to the AMC2 4W.
Please, calculate the voltage drop by checking the conductor specifications for characteristic resistance values. The voltage drop shall not exceed 2V.
Example:
Length = 50m/165 ft
U = 12V, I = 2A, maximum V_{Drop} = 2V

i.e. R_{AWG18} (acc. specs) = $6{,}385\frac{\Omega}{1000\,ft}$ or

$20{,}948\frac{\Omega}{km}$

$V_{Drop} = 20{,}948\frac{\Omega}{km} \cdot 0{,}05km \cdot 2A$ = 2.1V

$V_{Drop} = 6{,}385\frac{\Omega}{1000\,ft} \cdot 165\,ft \cdot 2A$ = 2.1V

Critical condition! Install the power supply closer to the controller.

Conductor data relay outputs

Use AWG18 conductors.
Please, calculate your voltage drop (see above) by checking conductor specifications for characteristic resistance values.

Conductor data analog input

Use AWG22 conductors.
Please, calculate your voltage drop (see above) by checking conductor specifications for characteristic resistance values.

Conductor data RS-485 slave	Use AWG22 conductors. Please, calculate your voltage drop (see above) by checking conductor specifications for characteristic resistance values.

CAUTION!
The voltage drop at the different cables add up! Their sum shall be less than 2V!

5 Installing

5.1 Mounting

The AMC2 4W can be attached on a standard 35 mm mounting rail via a snap-in mechanism. Attach the AMC-4W into the upper edge of the mounting rail, then push down the AMC2 4W and snap it onto the rail by pushing it towards the back.

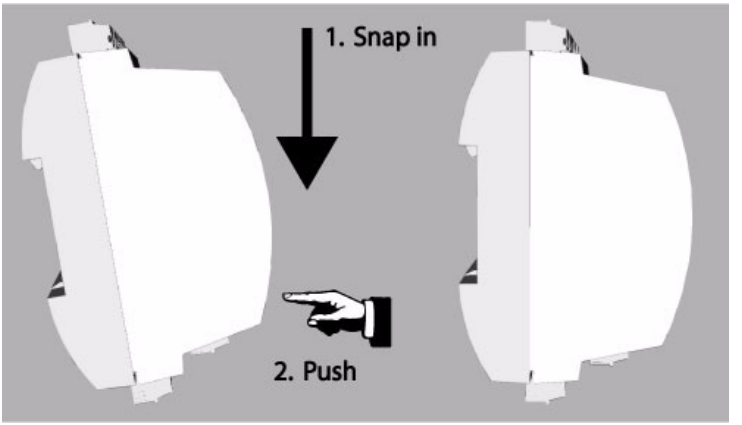


Fig. 5.1 Mounting the AMC2 4W on a mounting rail

5.2 Demounting

NOTE!
To remove the AMC2 4W from a mounting rail, first, remove all pluggable screw connectors.

Push down the AMC2 4W until it snaps out of the mounting rail. Pull the lower end of the AMC2 4W from the mounting rail.

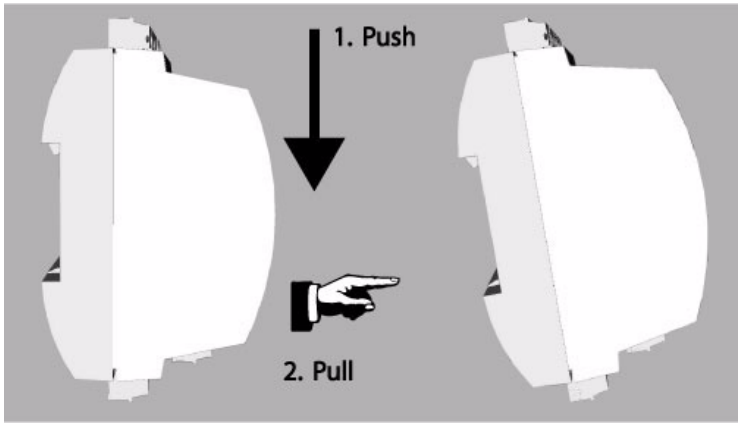


Fig. 5.2 Demounting the AMC2 4W from a mounting rail

5.3 Opening the AMC2 4W Case

NOTE!
To open the AMC2 4W, first, remove all pluggable screw connectors at least the host connection.

The AMC2 4W case consists of a top cover mounted with a two-point snap-in closure on a ground chassis. To open the AMC2 4W push down the two snap-ins with a srew driver. After that the cover can be moved to bottom.

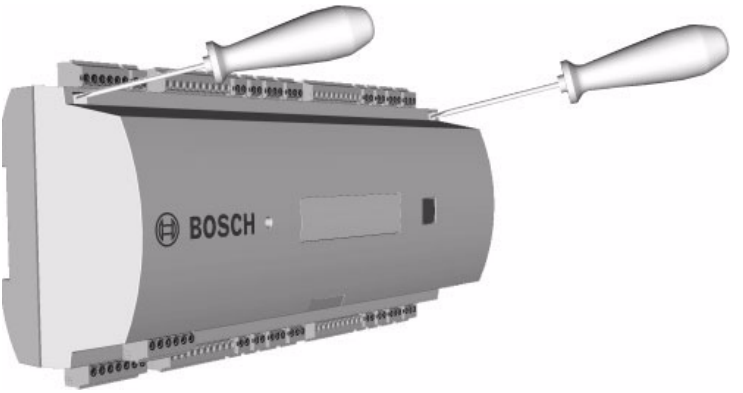


Fig. 5.3 Opening the AMC2 4W case

5.4 Cabling

CAUTION!
The cables used in the AMC2 4W access control system are not prone to electrical interference. However, you should avoid routing cables close to heavy load switching cables and equipment. If this is unavoidable, cross the cable at right angles every 1 to 2 m (3 to 6 ft) to reduce interference.

Grounding and Shielding

All components of the access control system must be grounded. The grounding points shall then be connected to an earth ground point. This insures that all components are properly protected against shock hazard.

It is good practice to shield all wires carrying low level signals. You should connect only one end of the shield, preferably the source end. Connecting both ends of a shield will result in ground loops. It is recommended that the unconnected end of the shield be insulated to prevent accidental connection.

The AMC2 4W enables you to set up a central ground or shielding point, simply by setting a couple of jumpers. Set these jumpers only if ground or shield is not connected otherwise.

WARNING!

Risk of damaging equipment!

When using multiple AMC2 4W devices, set the ground main jumper only once to assure a central point star connection.

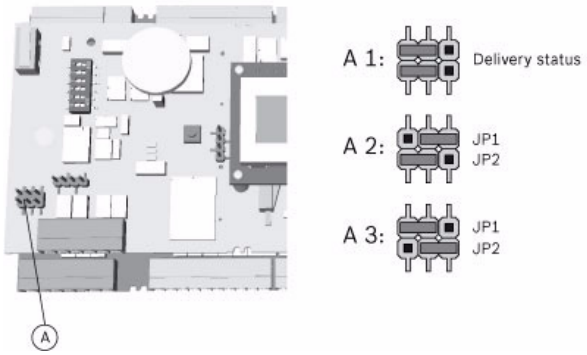


Fig. 5.4 Location of ground jumper RS-485 host interface

The jumper setting A1 shows the delivery status.

Setting jumper JP1 connects the internal ground of the AMC2 4W to the ground of the RS-485 host interface. If the ground conductor of the RS-485 interface between the AMC2 4W modules is connected, set Jumper JP2 only at a single AMC2 4W. The host system must not connect cable shield and protective ground. If not using the ground conductor of the RS-485 host interface, Jumper JP1 should be set at every AMC2 4W.
Setting jumper JP2 connects the internal ground of the AMC2 4W to the shield of the RS-485 host interface. Set Jumper JP2 only at the first AMC2 4W of a party line. The host system must not connect cable shield and protective ground. If the AMC2 4W is set to RS-232 mode, Jumper JP2 must be set.

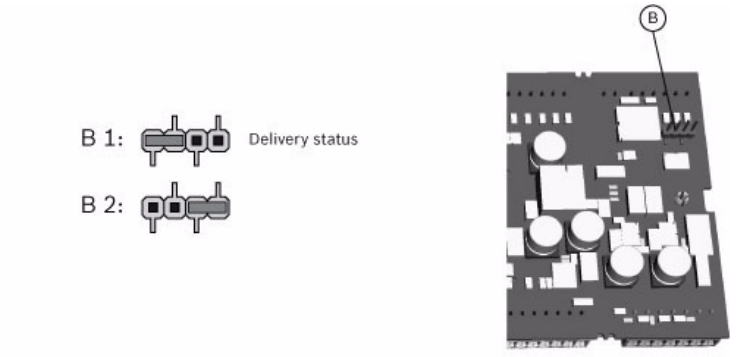


Fig. 5.5 Location of ground jumper bottom side

Jumper B connects the internal ground of the AMC2 4W to the RS-485 ground of the slave interface. Jumper B shall only be set (B2) if the AMC2 4W powers all other peripheral devices which are directly connected to the AMC2 4W.

5.5 Connecting Power Supply

Connect the power supply to the 7-pin pluggable screw connector labeled with POWER on the upper case.

NOTE!
A complete connection diagram is shown in chapter *Section 7.1 Connecting Diagrams* of this documentation.

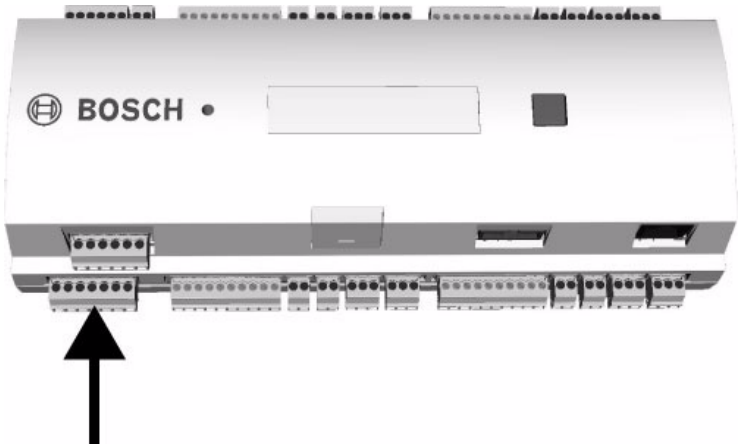


Fig. 5.6 Location of the power supply connector

An external power supply (10 - 30V DC) must be connected for internal electronics at pin 1 (positive) and pin 3 (negative) of the pluggable screw connector.
An additional power supply (12V DC) for peripheral devices (i.e. card readers and door openers) must be connected at pin 6 (positive) and pin 7 (negative).

WARNING!
Risk of Damage!
Power supply for external devices is 12V DC only! Applying higher voltages may cause hazards to people and damage to the equipment.

When using a shared 12 VDC power supply for internal electronics and peripherals, pin 1 and pin 6 resp. pin 3 and pin 7 can be shortened.
If an uninterruptible power supply (UPS) is used, the relay output for power good signals from the UPS is connected to the following pins:

- pin 4 and 7 for power good AC
- pin 5 and 7 for power good Battery
- pin 6 and 7 for power good DC

Otherwise these pins must be short-circuited.

5.6 RS-485 Host Interface

An RS-485 host system can consist of up to eight AMC2 4W controllers connected via 2- or 4-wire connection.

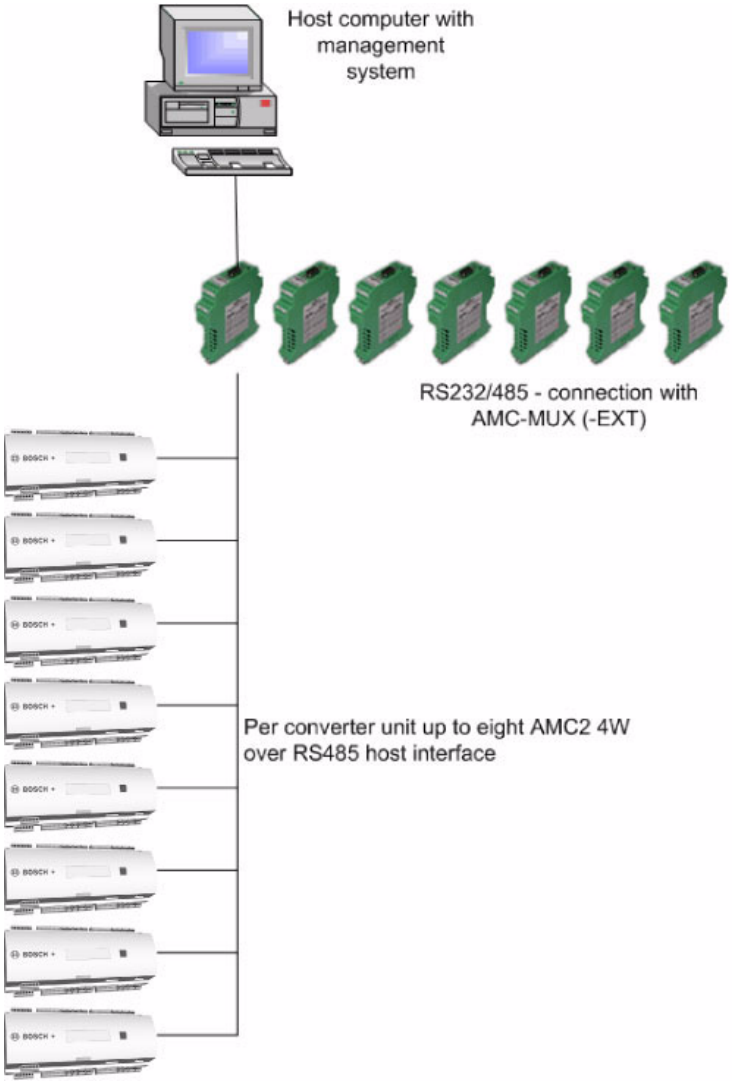

Host computer with management system
RS232/485 - connection with AMC-MUX (-EXT)
Per converter unit up to eight AMC2 4W over RS485 host interface

Fig. 5.7 Configuration of a RS-485 host system

The following conditions apply for an RS-485 bus system:

- A bus system consists of a bus line and/or one or more branch lines.
- Cable lengths exceeding 100m or 300ft must be installed as bus lines.
- Branch lines are branching connections from a bus line. If a branch line is used. the spur line should be attached directly to the device.
- Bus devices are the host computer.
- Peripheral devices are AMC2 4W which are connected to the host computer.
- Maximum cable length of a bus line must not exceed 1200m or 4000ft.
- The cable length of branch lines must not exceed 100m or 300ft.
- Any bus line conductor connects up to eight AMC2 4W. The maximum number of devices must not be exceeded.
- For longer bus lines connect the AMC2 4W to multiple AMC-MUX (-EXT) with the host.

To use RS-485 mode at the AMC2 4W, connect the data cables to the pluggable screw connector of the RS-485 host interface. Then set the RS-485 address via DIP switch or software and activate the RS-485 two-wire or four-wire mode via jumper settings.

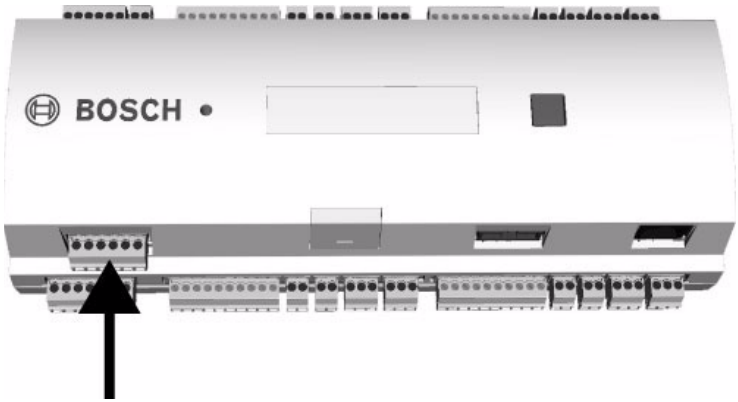


Fig. 5.8 RS-485 host interface

5.6.1 RS-485 Two Wire Connection

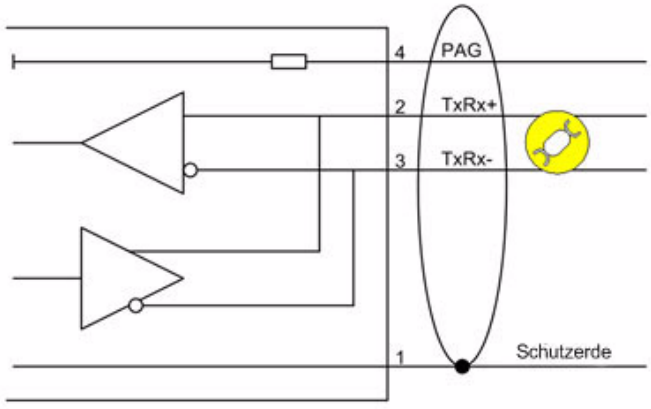


Fig. 5.9 Connection scheme of a RS-485 two wire connection

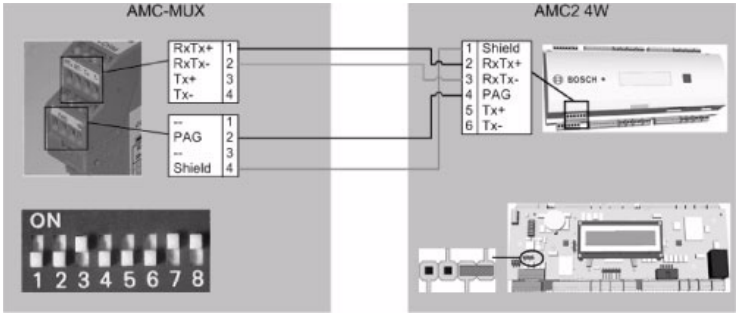


Fig. 5.10 Settings for RS-485 two wire connections

NOTE!
A complete connection diagram of the RS-485 host interface is shown in chapter *Section 7.1 Connecting Diagrams* of this documentation.

5.6.2 RS-485 Four Wire Connection

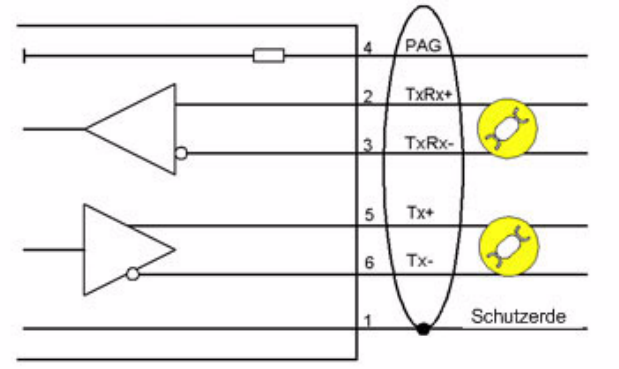


Fig. 5.11 Connection scheme of an RS-485 four wire connection

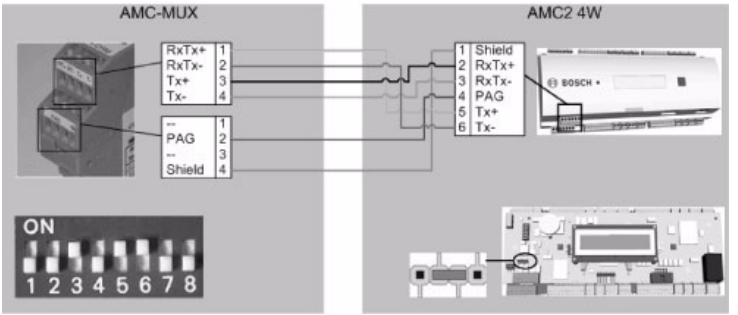


Fig. 5.12 Settings for RS-485 four wire connection

NOTE!
A complete connection diagram of the RS-485 host interface is shown in chapter *Section 7.1 Connecting Diagrams* of this documentation.

5.6.3 DIL Switch Address Selector

The first four DIL switches for address selection define the RS-485 address of the AMC2 4W in a RS-485 bus system. Switch 5 selects on of the two different protocols, SDEB and BPA (according to DIN6619). Switch 6 sets the connection to the host system to either RS-232 or RS-485.

NOTE!

Using Ethernet connection it is recommended to set switch 1 to ON (= delivery status)

Using RS-232 connection the address must be set, which is configured in the Device Editor. Therefore this is a point-to-point connection the usually configured address will be 1 - so the switch 1 must be also set to ON.

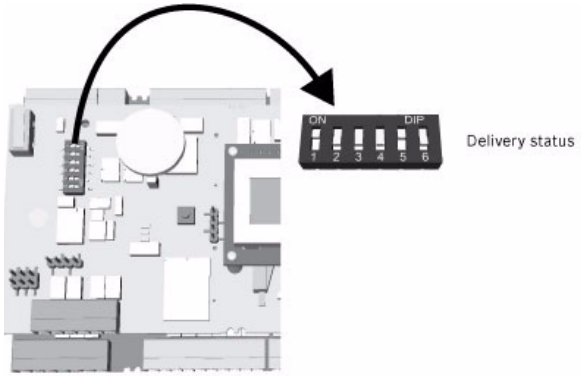


Fig. 5.13 Location of the RS-485 address selector

Address	DIP Switches			
	1	**2**	**3**	**4**
none	OFF	OFF	OFF	OFF
1	**ON**	OFF	OFF	OFF
2	OFF	**ON**	OFF	OFF
3	**ON**	**ON**	OFF	OFF
4	OFF	OFF	**ON**	OFF
5	**ON**	OFF	**ON**	OFF
6	OFF	**ON**	**ON**	OFF
7	**ON**	**ON**	**ON**	OFF
8	OFF	OFF	OFF	**ON**

Table 5.1 Setting the RS-485 address with the DIP swich

Mode	DIP Switches	
	5	**6**
ON	SDEB	RS-232
OFF	BPA	RS-485

Table 5.2 Protocol and connection settings

5.7 RS-232 Host Interface

The AMC2 4W offers an RS-232 serial interface to connect a host computer or serial modem.

CAUTION!
Cable length between two RS-232 COM serial interfaces must not exceed 15 meters (45 ft).

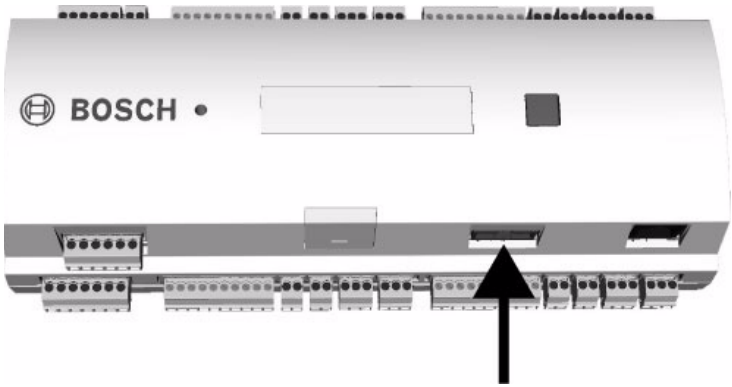


Fig. 5.14 Location of the RS-232 serial interface

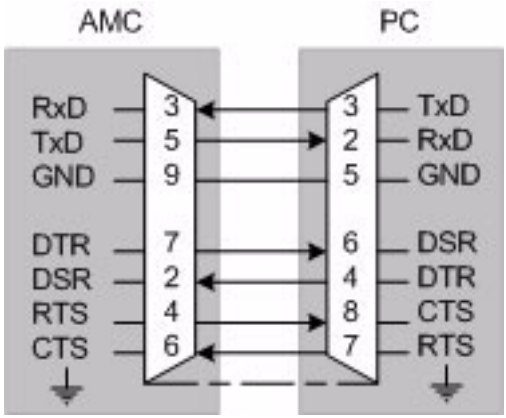


Fig. 5.15 Connection scheme of the RS-232 interface

NOTE!
A complete connection diagram of the RS-232 host interface is shown in chapter *Section 7.1 Connecting Diagrams* of this documentation.

5.8 Ethernet Interface

The AMC2 4W offers an additional 10/100 Mbit/s Ethernet auto-sensing interface to connect to a local area network or host computer.

CAUTION!
Use either a CAT5 crossover cable to connect the AMC2 4W directly to a computer's network interface or a standard CAT5 patch cable to connect the AMC2 4W to a network hub or network switch.

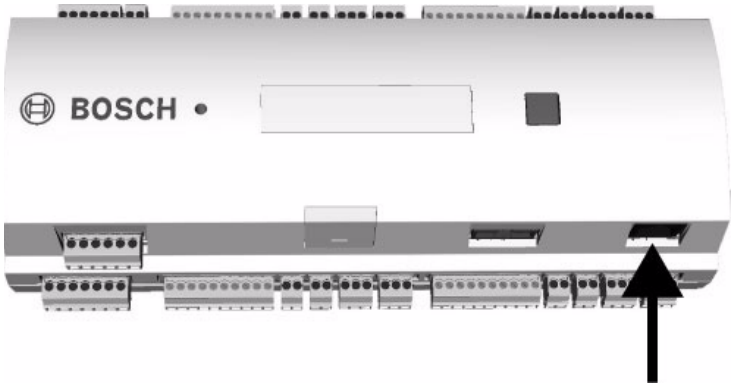


Fig. 5.16 Location of the Ethernet interface

NOTE!
A complete connection diagram of the Ethernet host interface is shown in chapter *Section 7.1 Connecting Diagrams* of this documentation.

5.9 RS-485 Extension Module Bus

The RS-485 Extension Module Bus expands the AMC2 4W with additional I/O modules (AMC 8I-8O or AMC 16I-16O). Up to three expansion modules can be connected to provide additional in- and outputs, for example, for elevator control.

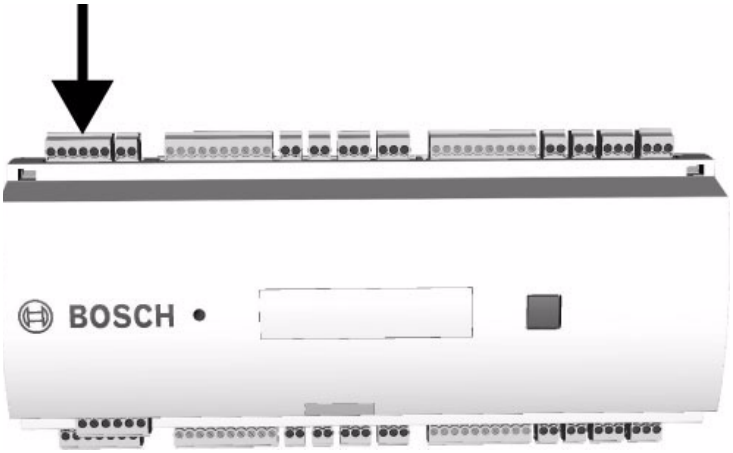


Fig. 5.17 Location of the RS-485 extension module bus

NOTE!
A complete connection diagram of the RS-485 extension module bus is shown in chapter *Section 7.1 Connecting Diagrams* of this documentation.

5.10 Wiegand Interface for Card Readers

The AMC2 4W has four Wiegand interfaces to integrate up to four card readers with Wiegand compatible interfaces. Each interface is connected via a 10-pin pluggable screw connector (S2, S7, S14 and S19).

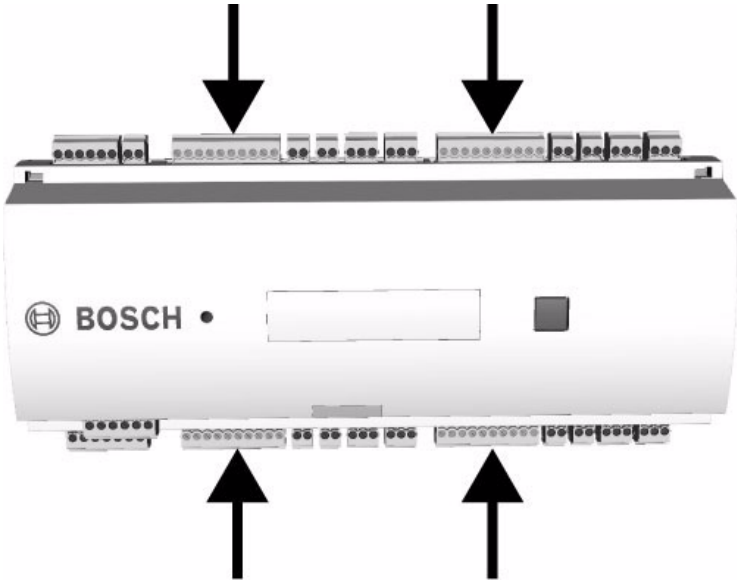


Fig. 5.18 Location of the Wiegand interfaces for external devices

NOTE!
A complete connection diagram of the Wiegand interface is shown in chapter *Section 7.1 Connecting Diagrams* of this documentation.

5.11 Connecting Relay Outputs

To operate locks or alarm systems the AMC2 4W has eight form C relay outputs. The outputs will be connected to the 3-pin pluggable screw connectors: S5, S6, S10, S11, S17, S18, S22, and S23.

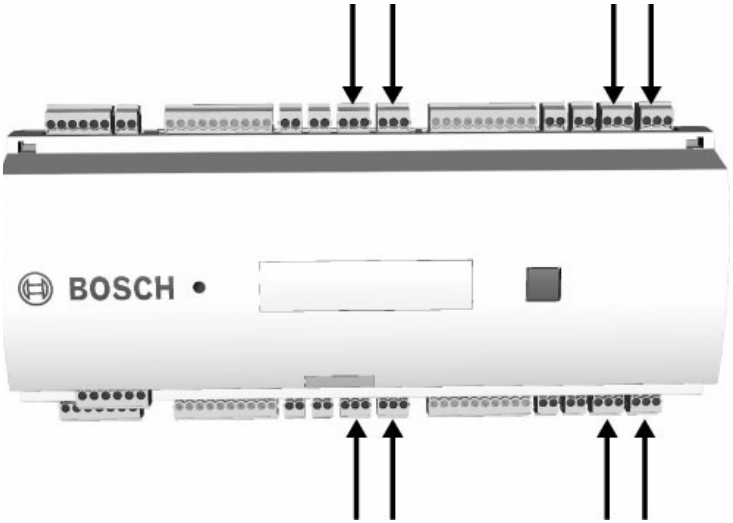


Fig. 5.19 Location of the relay output connectors

Each relay output can operate in ‘wet’ mode, using the AMC2 4W's internal 12V DC power supply for external devices or ‘dry’ mode with potential free contacts for externally powered systems.

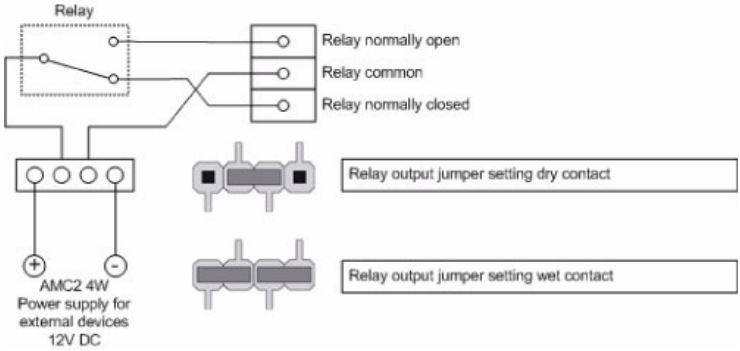


Fig. 5.20 Wet mode and dry mode of the AMC2 4W relay outputs

Maximum switching power of each relay output is 60 VA, maximum switching voltage 30 V DC and maximum switching current 2 A.

Risk of Damage!
Do not connect externally powered devices in wet mode This can damage the AMC2 4W

Risk of Damage!
Do not exceed switching specifications of the relay. Using exceeding voltage or current on relay contacts in either mode can damage the AMC-W.

NOTE!
A complete connection diagram of the relay output connectors is shown in chapter *Section 7.1 Connecting Diagrams* of this documentation.

Each relay output has a separate jumper setting on the bottom side of the lower circuit board to activate wet (D2)or dry (D1) mode.

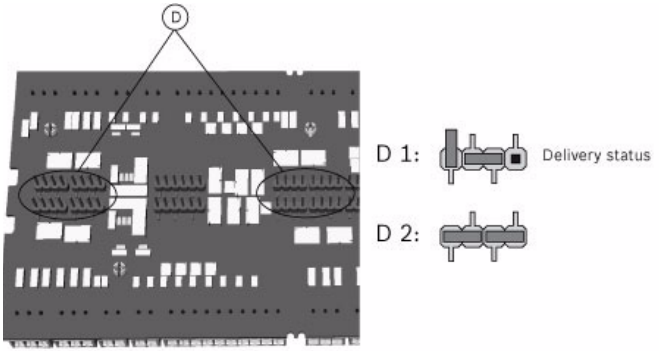


Fig. 5.21 Location of relay output jumpers (bottom side)

5.12 Connecting Analog Input Devices

The AMC2 4W has eight analog inputs, for example, for potential free lock mechanisms or to detect if a lock is closed or open. The inputs will be connected to the 2-pin pluggable screw connectors: S3, S4, S8, S9, S15, S16, S20, and S21.

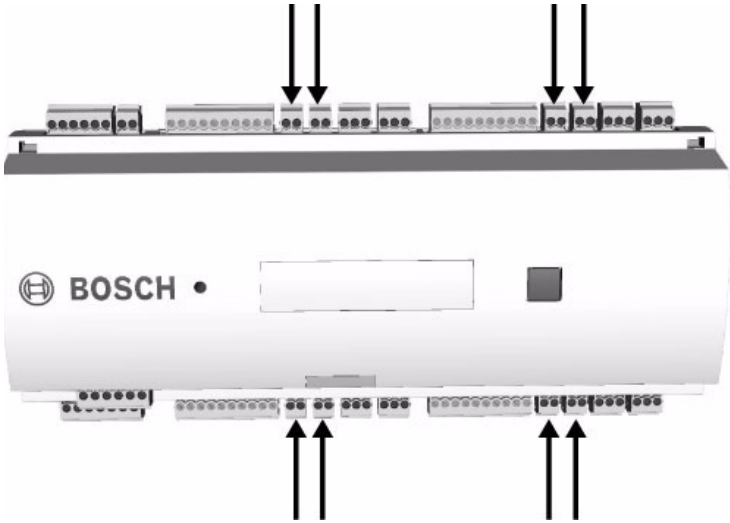
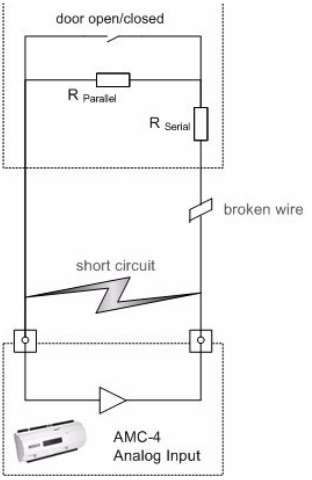


Fig. 5.22 Location of the analog input connectors

The AMC2 4W can also detect the wiring conditions ‘short circuit’ and ‘broken’ and initiate an alarm if the appropriate devices are connected.



1. Door open:$R_S + R_P$
2. Door closed:R_S
3. Broken wire:$R_S + R_P$ =
4. Short circuit:$R_S + R_P = 0$

The resistor values can vary and depend on the used lock system (wire resistance negligible).
Default values are:
R_S = 2,2 k
R_P = 4,7 k

Fig. 5.23 Operating modes of a lock using the analog input device

NOTE!
A complete connection diagram of the analog input devices is shown in chapter *Section 7.1 Connecting Diagrams* of this documentation.

5.13 Tamper Protection

To protect the AMC2 4W against unauthorized access and prevent the AMC2 4W from tampering with sensitive data, the AMC2 4W offers an additional interface to connect external tamper contacts. This interface is a potential-free 2-pin pluggable screw connector marked with T. If not using the tamper contact, short-circuit the contacts with a wire connection.

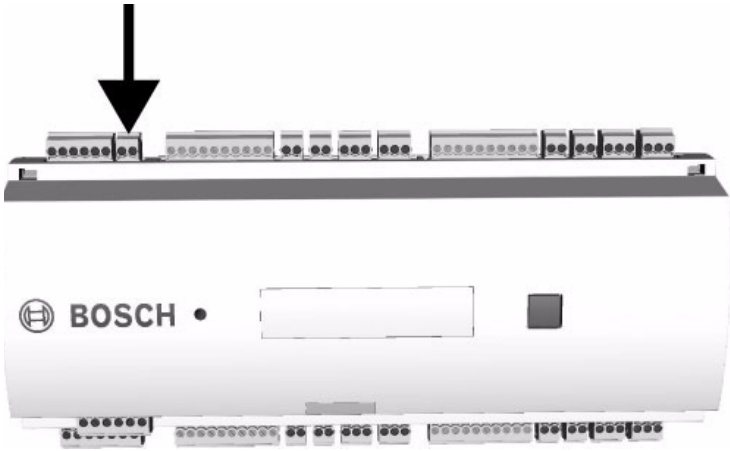


Fig. 5.24 Location of the tamper protection contact

6 Operating

6.1 Status Display of the AMC2 4W

The LC Display delivers information about the AMC2 4W status. Push the 'Dialog' button to switch between different modes.

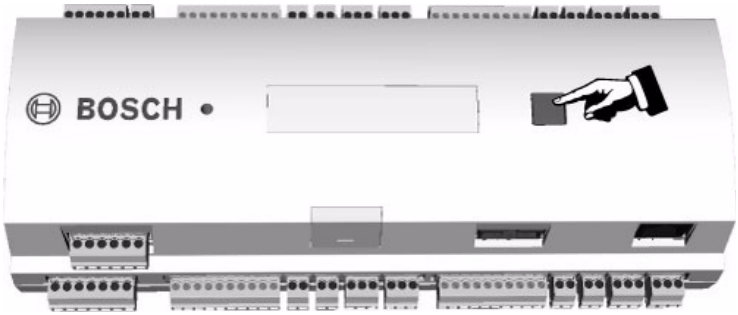


Fig. 6.1 Location of the ’Dialog’ button

The display mode which has been set remains until the next operation of the ‘Dialog’ button. The order of the display pages is determined and follows the scheme shown in the table below.

Push	Display (Example)	Description
0	V37.02 02.03.06	Software versions and date of the downloader (= default page)
1	99999876543210 A	BOSCH serial number and bus address A = address 1 ... H = address 8
2	02.06 15:35:15	Current date and time
3	Dig. IO: ::::::::::::::::	Display of the digital contacts: setted input signals will be shown with an extension above - output signal with an extension below
3a	Dig. I1: ::::::::[::::::::]	If there are I/O-Boards connected the signals will be shown on separate pages.
3b	Dig. I2: ::::::::[::::::::]	
3c	Dig. I3: ::::::::[::::::::]	
4	MAC 0010174C8A0C	MAC-address
5	N AMC-1234-5678	Network name of the AMC
6	I 192.168.10.18	IP-address of the AMC
7	H 0.0.0.0	IP-address of the host computer
8	DHCP 1	DHCP-status: 1 = on 2 = off
9	D 192.168.10.1	IP-address of the DNS server
10	Host: +	Host activity: + = online - = offline

Tabelle 6.1 Display pages

6.2 Configuring the Ethernet Interface

To configure the AMC2 4W in a TCP/IP network environment use the tool **`AmcIpConfig`** provided in the following directory : \\Runtime-drive:\MgtS\AccessEngine\AC\bin

This tool can be copied and used on every computer.

NOTE!
The usage of the software application to configure the AMC2 4W via Ethernet interface is described in the online help of the tool.

6.3 Resetting the AMC2 4W

When a problem occurs, first, try to fix the problem directly. If this does not solve the problem, resetting the AMC2 4W may help:

1. Insert the provided screwdriver into the hole as shown in the figure below.
2. Push the reset button for at least three seconds.
3. The AMC2 4W will be reset and reboots. You are back in the download program.
4. Now it is possible to reconfigure the AMC2 4W from the beginning.
5. If the problem still arises, please, call your local service.

Resetting the network configurations:

1. Reset the AMC as described above (in download program)
2. Open the upper case of the AMC2 4W
3. Set all six DIP switches of the RS-485 selector to ON
4. Press the tamper switch on the upper left side of the board

The AMC2 4W will now have the following network configuration:

- DHCP = 0
- IP = 127.0.0.1

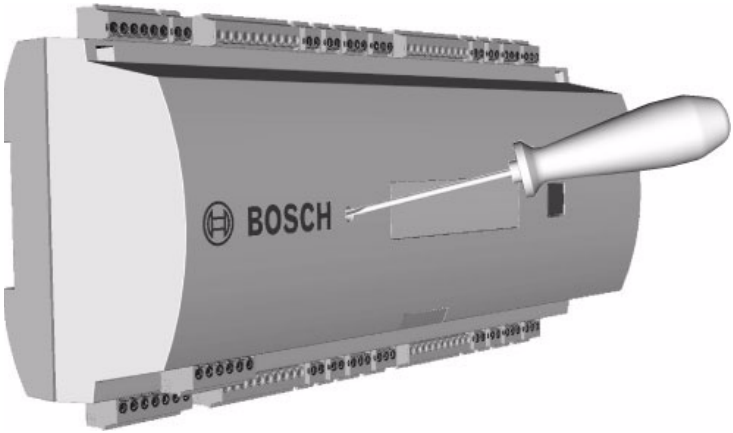


Fig. 6.2 Restarting the AMC2 4W with the provided screw driver

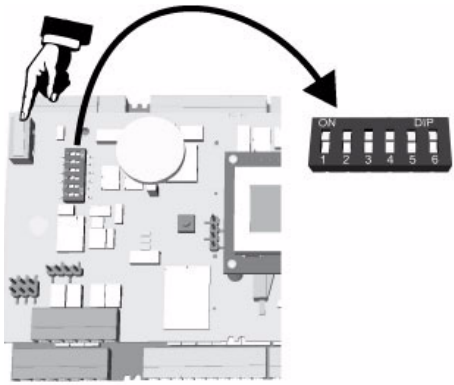


Fig. 6.3 Resetting the AMC2 4W to delivery state

7 Appendix

7.1 Connecting Diagrams

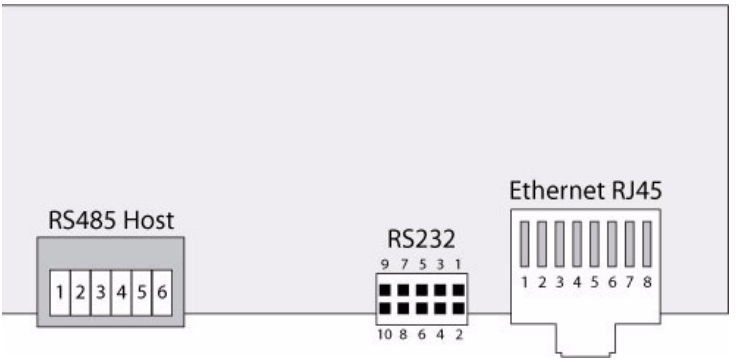


Fig. 7.1 Connectors on upper PCB

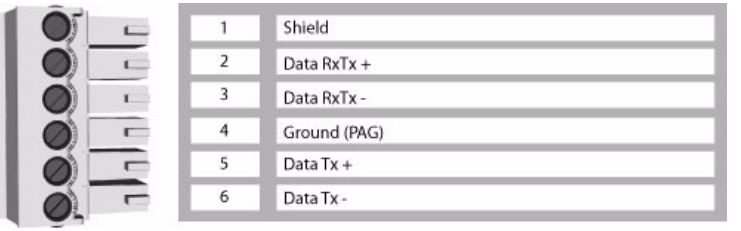


Fig. 7.2 RS-485 host on upper PCB

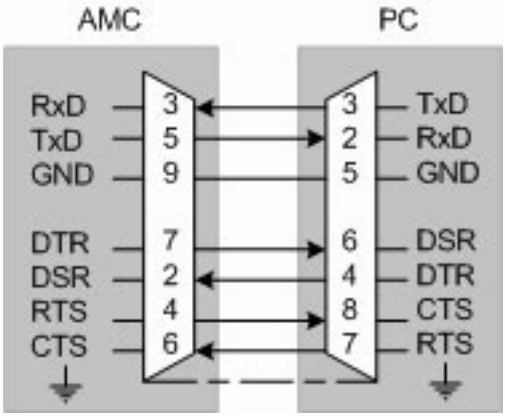


Fig. 7.3 Connecting diagram of the RS-232 serial interface

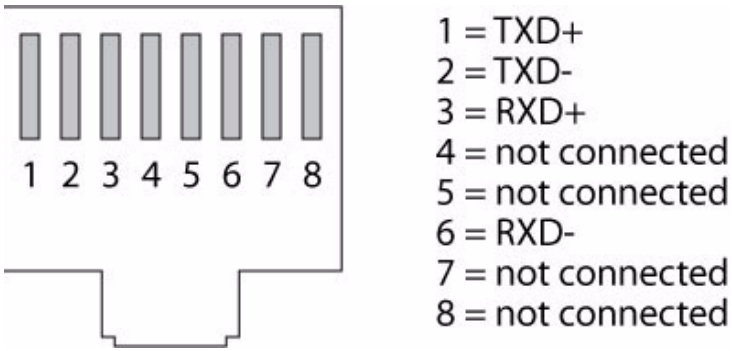


Fig. 7.4 Ethernet Network socket (RJ45)

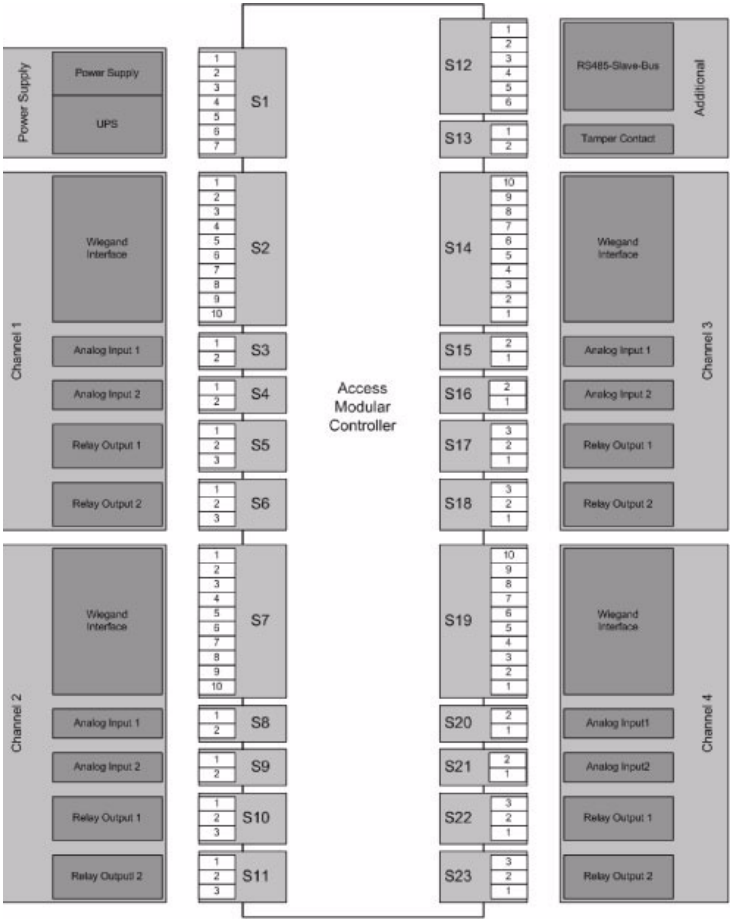


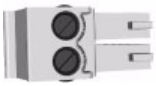
Fig. 7.5 Connector blocks of the AMC2 4W

1	Internal power supply, DC positive (10V - 30V)
2	Shield
3	Internal power supply, DC negative
4	UPS (uninterruptible power supply) - AC
5	UPS (uninterruptible power supply) - Battery
6	UPS (uninterruptible power supply) - DC
7	UPS (uninterruptible power supply) - Common

Fig. 7.6 Power supply

1	Reader Supply - 12V +
2	Reader Supply - 12V -
3	Data 0
4	Data 1
5	Shield
6	Green LED
7	Red LED
8	Beeper
9	Hold
10	Card Present

Fig. 7.7 Wiegand interface

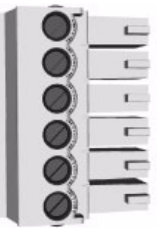


1	Analog Input, in
2	Analog Input, out

Fig. 7.8 Analog input

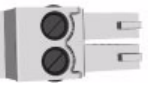
1	Relay Output, normally open
2	Relay Output, common
3	Relay Output, normally closed

Fig. 7.9 Relay output



1	DC positive - 12V, power supply for external devices
2	DC negative, power supply for external devices
3	Shield
4	Data RxTx +
5	Data RxTx -
6	Ground (PAG)

Fig. 7.10 Slave interface



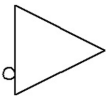
1	Tamper Contact, in
2	Tamper Contact, out

Fig. 7.11 External tamper contact

7.2 Legend

Twisted pair connection

Transmitter



Receiver

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